TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 95OPWE057
SIGNIFICANT MODIFICATION #1

to be issued to:

HS Resources, Inc.
Weld County
Source ID 1230048

Michael E. Jensen
December 12, 2000

I. PURPOSE:

This document establishes the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the modification of the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit modification by the EPA and during Public Comment. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Conclusions in this document are based on information provided in the original application submittal of February 2, 2000, and a supplemental Title V technical information submittal of May 18, 2000, the technical documents submitted for the construction permits, as well as telephone contacts with the applicant.

The provision of the terms and conditions for the incinerator to be installed at this facility made in conjunction with the processing of this Operating Permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This Operating Permit incorporates and shall be considered to be a combined construction/operating permit for the provision of the incinerator terms and conditions, and the permittee shall be allowed to operate under the revised conditions upon issuance of this Operating Permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. SOURCE DESCRIPTION:

This facility is part of the oil and natural gas production operation prior to a gas plant. The facility consists of seven internal combustion engines for the compression and transmission of natural gas and one triethylene glycol dehydration unit to remove water from the natural gas. Two of the engines are equipped with non-selective catalytic reduction systems and the glycol dehydration unit is connected to a flare to reduce emissions. Fugitive VOC emissions from equipment leaks are also a significant source of emissions at this facility.

III. MODIFICATIONS:

HS Resources submitted a Construction Permit application for an incinerator to be installed at this facility. The applicable requirements for the incinerator are being established directly as a combined construction permit / operating permit modification. Construction Permit 00WE247 was issued for the second glycol dehydrator to be installed at the site. Construction Permit 95WE774 was modified to address the use of the existing flare for the control of the hazardous air pollutant (HAP) and volatile organic compound (VOC) emissions from the still vents of the two dehydrators. The glycol dehydrators are subject to 40 CFR Part 63, Subpart HH, National Emission Standards for Oil and Natural Gas Production, the Maximum Available Control Technology (MACT) provisions. HS Resources increased the flare VOC removal efficiency and requested limits on the HAP emissions to limit the emissions to below the dehydrator MACT provisions threshold.

The Division is also using this opportunity to update the permit language to the current standard language being used in the Operating Permit. The due date for the submittal of the Title V reports was changed from the 15th day of the month to the end of the month. This is the standard due date now being used and provides a full month to prepare the reports to be submitted.

INCINERATOR

<u>Unit I001</u> - One (1) Elastec Inc. Smart Ash Energy Recovery Incinerator Model 100.

1. Applicable Requirements - This unit was to be installed at the Ft Lupton Compressor Station under Construction Permit 98WE0596. After the Title V Operating Permit was issued for both the Ft Lupton and the Hudson Compressor Stations, HS Resources elected to increase the operating rate for the existing incinerator at the Ft Lupton facility and install this incineration unit at the Hudson facility. Subsequently, HS Resources requested cancellation of Construction Permit 98WE0596. Rather than issue a separate construction permit for the new incinerator at the Hudson facility, the terms and conditions for the incinerator are being established directly as a combined construction permit/operating permit modification.

The applicable requirements are being directly established for this incinerator. Operation of the equipment shall comply with Colorado Air Quality Control Regulation No. 6, Part B.VII, New Source Performance Standards (NSPS) for incinerators which includes visible emission limits, particulate emission limits, and record keeping requirements. The charging rate shall not exceed 120 pounds per hour and 120 tons per year; absorbent materials that contain volatile liquids shall not be burned in this unit and material that is burned must have a flash point higher than 100 degrees Fahrenheit; the combustion chamber must not be overloaded; liquid fuel shall not be used as start-up fuel, the unit shall be operated to comply with the limits on emissions of air pollutants; operation of the incinerator in accordance with manufacturer's operating instructions and by trained personnel who are competent and knowledgeable of the operating instructions

and maintenance procedures; there shall be no radioactive and hazardous waste materials of any type burned in this unit; and APEN reporting per Colorado Regulation No. 3, Part A.II.

The due date of the first semi-annual monitoring report required by this operating permit will be 180 days after the initial approval of the construction permit was issued and/or the equipment commenced operation. Therefore, the Division considers that the Responsible Official certification submitted with that report will serve as the self-certification with the appropriate provisions of the applicable requirements being established directly in this Operating Permit.

2. Emission Factors - Although emissions are low for this unit, there are no emission de minimis levels for either APEN or permitting requirements (Colorado Regulation No. 3, Part A.II.D.2 and Regulation No. 3, Part B.III.D.7) for incinerators. As a result annual emission calculations are required. The pollutants of concern are Particulate Matter (PM and PM_{10}), Nitrogen Oxides (NOx), and Sulfur Dioxide (SO_2) and are dependent on the material combusted. Approval of emission factors is necessary to the extent that accurate actual emissions are required to verify the need to submit revised APENs to update the Division's Emission Inventory and for payment of fees. The emission factors used in the here are lower than the values found in Tables 2.1-2 and 2.1-7 of the EPA AP-42 reference publication.

Pollutant	Emission Factor lb/ton	AP-42 lb/ton
PM	1.4	25.1
PM_{10}	1.04	NA
SO_2	1.5	3.46
NOx	10.0	2.47

3. Monitoring Plan - HS Resources will calculate emissions for fee purposes based on the amount of waste burned. Annual records of the amount of waste burned shall be maintained for calculation of the annual emissions to ensure compliance with the annual limitations and fee payment. Monitoring also includes the need to maintain records of personnel trained to operate the incinerator and perform visual emission observations. Daily records of the burning rate, hours of operation, any particulate measurements taken, type of waste, weight of charge and any notes regarding incineration operation shall be summarized monthly.

4. Compliance Status - A current APEN reporting criteria emissions is on file with the Division. This unit is currently considered to be in compliance with all applicable requirements.

GLYCOL DEHYDRATORS

Unit P010: Q. B. Johnson Triethylene Glycol Dehydration Unit, Rated at 120 mmSCF/day, Serial Number RG51196

Unit P018: Hanover Glycol Dehydration Unit, Rated at 43 mmSCF/day, Serial Number not available

At the time the Title V permit was initially issued, the Q.B. Johnson glycol dehydrator was equipped with a Flare Industries air assisted MAVP-18 flare. The Hanover dehydration unit has now been installed, and the still vent emissions from both dehydrators are treated by the single flare. The flash tank emissions from each dehydrator are routed to the respective dehydrator reboiler burner.

1. Applicable Requirements – Construction Permit 95WE774 was first issued for a dehydrator equipped with a condenser to limit the still vent volatile organic compound emissions (VOC). The VOC emissions were limited to avoid the need for a Prevention of Significant Deterioration (PSD) review. The VOC limit indirectly limited the hazardous air pollutant (HAP) emissions because the potential hazardous air pollutant emissions are VOCs. The condenser efficiency was estimated to be approximately 92%. In October 1997, the source requested to route the still vent emissions to a flare instead of a condenser. The flare VOC removal efficiency was estimated at 98%. The control efficiency was not included in the Operating Permit as an applicable requirement; however, the Division did require monitoring to ensure that the control device was operating effectively. The monitoring included a quarterly BTEX analysis to be compared to a "worst case" BTEX composition

In the time period since Construction Permit 95WE774 was issued, 40 CFR Part 63, Subpart HH, National Emission Standards for Oil and Natural Gas Production (the Oil and Gas MACT provisions) has been issued. The provisions establish applicable thresholds of 10 tons per year for an individual HAP and 25 tons per year for the total HAP emissions from the glycol dehydrators and flash tanks.

Also since Construction Permit 95WE774 was issued, facility operation identified the need for a second dehydrator. The still vent emissions from the second dehydrator are to be routed to the existing flare, and the control efficiency of the flare has been defined as 99%. Construction Permit 95WE774 was revised to reflect the provision of the flare instead of the condenser, and require the demonstration of a 99% reduction of the VOC emissions. Construction Permit 00WE0247 was issued for the Hanover dehydrator to be installed and contained the same provisions as 95WE774. Each permit set HAP emission limits of 10/25 tons per year and required a statement to be filed with EPA that the hazardous air pollutants were being limited to below the Subpart HH applicability thresholds.

Some additional information is needed for clarification on the Construction Permit HAP limits. The Construction Permit logic was based on the facility being part of the production field. As part of the production field, Subpart HH sets the HAP thresholds at 10 tons per year for an individual HAP and 25 tons per year for total HAPs. These thresholds are for the sum of the HAP emissions from the dehydrators and flash tanks at the facility. The Construction Permits limits the HAP for each dehydrator at the maximum levels and is silent on the issue of the flash tank emissions. The existing Construction Permit limits would allow the emissions from each dehydrator to comply with the respective HAP limits, but not limit the total dehydrator/flash tank HAP emissions to below the Subpart HH thresholds. The wording of the applicable requirements in the modified Operating Permit is being revised to clarify the intention of the HAP limits.

2. Emission Factors - Triethylene glycol is contacted with the natural gas stream to remove moisture. This mixture is heated in the distillation section of the unit and the water and some entrained VOCs are discharged to the atmosphere. Some of the volatile compounds may be hazardous air pollutants. The still vent emissions are routed to the flare to reduce the volatile emissions being discharged. Dehydrator still vent emissions are typically predicted using the Gas Research Institute's computer modeling program named GLYCalc. The VOC and various HAPs emissions estimates are dependent upon the variables input into this model. These variables include the glycol recirculation rate, cubic feet of gas processed, desired moisture content (dew point) of processed gas, the type of emissions control device provided, and the chemical composition of the natural gas.

The combustion emissions from the flare need to be considered. The following emission factors are from AP-42, Table 13.5-1 and 13.5-2 and are based on the amount of fuel combusted (waste gas and supplemental gas combined).

Pollutant	EF (lb/MMBtu)
NOx	0.37
CO	0.068
VOC*	0.0448

*Based on 32% of TOC being VOC (AP-42, Table 13.5-2).

Combustion emissions from the reboiler heaters are exhausted through a separate stack. The heater for the Johnson dehydrator is rated at 1.5 mmBtu/hr and falls under the insignificant activity category of Colorado Regulation 3, Part C, Section II.E.3.k. No specific heater rating was provided for the Hanover reboiler; however, the Division's experience is that these small combustion units are insignificant activities. Therefore, these combustion emissions do not need to be considered for the Operating Permit.

3. Monitoring Plan - The Gas Research Institute's manual for their GLYCalc Version 3.0 Model defines the wet gas (inlet) temperature, glycol recirculation rate, and the gas benzene, toluene, ethyl benzene,

xylene (BTEX) content as the three critical inputs to the model for triethylene glycol units. Changes to the gas flow rate and inlet pressure do not radically affect emissions from glycol dehydrators.

The previous version of the permit required monitoring of the inlet temperature, recirculation rate, flash tank pressure and temperature and BTEX composition of the natural gas processed. The GlyCalc model is to used to estimate the emissions of VOCs and HAPs when defined parametric values defined in a table in the Operating Permit are not indicative of operating conditions during the month. The gas composition needed for the model is obtained from quarterly sampling of the incoming gas.

Calculation and record keeping of the amount of gas throughput to the flare must be done monthly to provide a twelve month rolling total of the gas used. The supplemental heat required by the flare to achieve the 99% emissions reduction is calculated by the GLYCalc model. The actual heat provided by the supplemental fuel for the flare is calculated from the records and compared to the value determined by the model to demonstrate the 99% reduction has been achieved.

4. Compliance Status – In the absence of evidence to the contrary the dehydration units are considered to be in compliance with the permit requirements.

FACILITY EMISSIONS:

The facility emissions have changed slightly as shown in the following table. The change in the HAP emissions situation does not lend itself to a simple display of values. Previously there were no limits on the HAP emissions. Now there are limits on the combined HAP emissions from the dehydrators and flash tanks, but there are still no limits on the HAP emissions from the internal combustion engines.

FACILITY EMISSION SUMMARY

Pollutant	Revised Potential to Emit, TPY	Previous Potential to Emit, TPY
NOx	1411.4	1411.4
VOC	123.1	129.4
CO	293.8	293.8